

located in a coal seam determined to be susceptible to spontaneous combustion, the approved ventilation plan shall specify the following:

(1) Measures to detect methane, carbon monoxide, and oxygen concentrations during and after pillar recovery, and in worked-out areas where no pillars have been recovered, to determine if the areas must be ventilated or sealed.

(2) Actions that will be taken to protect miners from the hazards of spontaneous combustion.

(3) If a bleeder system will not be used, the methods that will be used to control spontaneous combustion, accumulations of methane-air mixtures, and other gases, dusts, and fumes in the worked-out area.

§ 75.335 Seal strengths, design applications, and installation.

(a) *Seal strengths.* Seals constructed on or after October 20, 2008 shall be designed, constructed, and maintained to withstand—

(1)(i) At least 50-psi overpressure when the atmosphere in the sealed area is monitored and maintained inert and designed using a pressure-time curve with an instantaneous overpressure of at least 50 psi. A minimum overpressure of at least 50 psi shall be maintained for at least four seconds then released instantaneously.

(ii) Seals constructed to separate the active longwall panel from the longwall panel previously mined shall be designed using a pressure-time curve with a rate of pressure rise of at least 50 psi in 0.1 second. A minimum overpressure of at least 50 psi shall be maintained; or

(2)(i) Overpressures of at least 120 psi if the atmosphere in the sealed area is not monitored, is not maintained inert, the conditions in paragraphs (a)(3)(i) through (iii) of this section are not present, and the seal is designed using a pressure-time curve with an instantaneous overpressure of at least 120 psi. A minimum overpressure of 120 psi shall be maintained for at least four seconds then released instantaneously.

(ii) Seals constructed to separate the active longwall panel from the longwall panel previously mined shall be designed using a pressure-time curve

with a rate of pressure rise of 120 psi in 0.25 second. A minimum overpressure of 120 psi shall be maintained; or

(3) Overpressures greater than 120 psi if the atmosphere in the sealed area is not monitored and is not maintained inert, and

(i) The atmosphere in the sealed area is likely to contain homogeneous mixtures of methane between 4.5 percent and 17.0 percent and oxygen exceeding 17.0 percent throughout the entire area;

(ii) Pressure piling could result in overpressures greater than 120 psi in the area to be sealed; or

(iii) Other conditions are encountered, such as the likelihood of a detonation in the area to be sealed.

(iv) Where the conditions in paragraphs (a)(3)(i), (ii), or (iii) of this section are encountered, the mine operator shall revise the ventilation plan to address the potential hazards. The plan shall include seal strengths sufficient to address such conditions.

(b) *Seal design applications.* Seal design applications from seal manufacturers or mine operators shall be in accordance with paragraphs (b)(1) or (b)(2) of this section and submitted for approval to MSHA's Office of Technical Support, Pittsburgh Safety and Health Technology Center, P.O. Box 18233, Cochran's Mill Road, Pittsburgh, PA 15236.

(1) An engineering design application shall—

(i) Address gas sampling pipes, water drainage systems, methods to reduce air leakage, pressure-time curve, fire resistance characteristics, flame spread index, entry size, engineering design and analysis, elasticity of design, material properties, construction specifications, quality control, design references, and other information related to seal construction;

(ii) Be certified by a professional engineer that the design of the seal is in accordance with current, prudent engineering practices and is applicable to conditions in an underground coal mine; and

(iii) Include a summary of the installation procedures related to seal construction; or

(2) Each application based on full-scale explosion tests or equivalent

means of physical testing shall address the following requirements to ensure that a seal can reliably meet the seal strength requirements:

- (i) Certification by a professional engineer that the testing was done in accordance with current, prudent engineering practices for construction in a coal mine;
- (ii) Technical information related to the methods and materials;
- (iii) Supporting documentation;
- (iv) An engineering analysis to address differences between the seal support during test conditions and the range of conditions in a coal mine; and
- (v) A summary of the installation procedures related to seal construction.

(3) MSHA will notify the applicant if additional information or testing is required. The applicant shall provide this information, arrange any additional or repeat tests, and provide prior notification to MSHA of the location, date, and time of such test(s).

(4) MSHA will notify the applicant, in writing, whether the design is approved or denied. If the design is denied, MSHA will specify, in writing, the deficiencies of the application, or necessary revisions.

(5) Once the seal design is approved, the approval holder shall promptly notify MSHA, in writing, of all deficiencies of which they become aware.

(c) *Seal installation approval.* The installation of the approved seal design shall be subject to approval in the ventilation plan. The mine operator shall—

(1) Retain the seal design approval and installation information for as long as the seal is needed to serve the purpose for which it was built.

(2) Designate a professional engineer to conduct or have oversight of seal installation and certify that the provisions in the approved seal design specified in this section have been addressed and are applicable to conditions at the mine. A copy of the certification shall be submitted to the District Manager with the information provided in paragraph (c)(3) of this section and a copy of the certification shall be retained for as long as the seal is needed to serve the purpose for which it was built.

(3) Provide the following information for approval in the ventilation plan—

- (i) The MSHA Technical Support Approval Number;
- (ii) A summary of the installation procedures;
- (iii) The mine map of the area to be sealed and proposed seal locations that include the deepest points of penetration prior to sealing. The mine map shall be certified by a professional engineer or a professional land surveyor.
- (iv) Specific mine site information, including—
 - (A) Type of seal;
 - (B) Safety precautions taken prior to seal achieving design strength;
 - (C) Methods to address site-specific conditions that may affect the strength and applicability of the seal including set-back distances;
 - (D) Site preparation;
 - (E) Sequence of seal installations;
 - (F) Projected date of completion of each set of seals;
 - (G) Supplemental roof support inby and outby each seal;
 - (H) Water flow estimation and dimensions of the water drainage system through the seals;
 - (I) Methods to ventilate the outby face of seals once completed;
 - (J) Methods and materials used to maintain each type of seal;
 - (K) Methods to address shafts and boreholes in the sealed area;
 - (L) Assessment of potential for overpressures greater than 120 psi in sealed area;
 - (M) Additional sampling locations; and
 - (N) Additional information required by the District Manager.

[73 FR 21206, Apr. 18, 2008]

§ 75.336 Sampling and monitoring requirements.

(a) A certified person as defined in § 75.100 shall monitor atmospheres of sealed areas. Sealed areas shall be monitored, whether ingassing or outgassing, for methane and oxygen concentrations and the direction of leakage.

(1) Each sampling pipe and approved sampling location shall be sampled at least every 24 hours.

(i) Atmospheres with seals of 120 psi or greater shall be sampled until the